UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
9311 GROH ROAD
GROSSE ILE, MI 48138

MEMORANDUM

Subject: ACTION MEMORANDUM - Request for Approval and Funding of a Time-Critical Removal Action and Exemption from the $2 Million Statutory Limit at the Alreco Metals Site, Benton Harbor, Berrien County, Michigan (Site ID #C52N)

From: Elizabeth Nightingale, On-Scene Coordinator (OSC)
Emergency Response Branch 1/Emergency Response Section 2

Through: Jason H. El-Zein, Chief
Emergency Response Branch 1

To: Richard C. Karl, Director
Superfund Division

I. PURPOSE

The purpose of this Action Memorandum is to request and document your approval to expend up to $3,126,368 and grant an exemption from the $2 million statutory limit to conduct a time-critical removal action at the Alreco Metals Site ("Site"), in Benton Harbor, Berrien County, Michigan (Figure A-1). The time-critical removal action proposed herein is necessary to mitigate threats to public health, welfare, and the environment posed by the presence of uncontrolled hazardous substances at the Site. There are no nationally significant or precedent-setting issues associated with the proposed response at this non-National Priority List (NPL) site.

This Action Memorandum serves as approval for expenditures by the U. S. Environmental Protection Agency (EPA), as the lead technical agency, to take actions described herein to abate the imminent and substantial endangerment posed by the hazardous substances at the Site. The proposed removal of the hazardous substances will be taken pursuant to Section 104(a)(1) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S. Code (U.S.C.) § 9604(a)(1), and Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (C.F.R.) § 300.415.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID: MIN000504648
RCRA ID: MID054753322

State ID: N/A
Category: Time-Critical Removal Action
Site Location: 900 Alreco Drive, Benton Harbor, Michigan, 49022

The Site is a former industrial property located in a commercial/industrial area in Benton Harbor, Michigan (Figure A-1). The Site is approximately 28 acres in size and contained approximately 180,000 square feet of buildings (Figure A-2) and numerous outdoor storage areas that contain aluminum smelting waste (Figure A-3)[1]. The majority of the buildings were demolished, exposing waste piles to the elements. Demolition of most of the remaining buildings was underway at the time of the EPA site assessment. Much of the Site is covered in ash/dross, debris, insulation, garbage, wooden pallets, scrap, and other miscellaneous containers that are located in uncovered areas of the site and exposed to all weather-related events. Large sections of fence were either missing or broken along all sides of the Site. Numerous people were observed sifting through the various waste piles for scrap materials.

The Site has a complex history of ownership and operation. EPA is in the process of reviewing documentation related to historical ownership and historical cleanup activities. According to the Michigan Department of Environmental Quality (MDEQ) this Site was an aluminum smelting facility from 1965 to 1981, with secondary (recycled) aluminum smelting activities conducted on the property from 1981 through at least 2001. The plant was purchased by the Reynolds Metals Company from Michigan Standard Alloys in 1981. It was refurbished for the reclamation of aluminum for the die cast industry. Based upon information from MDEQ, the Site operated under the name ALRECO, a division of Reynolds Aluminum. In 1981, in an action brought by Berrien County, the Berrien County Circuit Court entered a consent order against ALRECO for site cleanup. In 1983, ALRECO conducted the removal of large amounts of aluminum dross disposed of along the Paw Paw River and restored the banks as part of the court-ordered response. The MDEQ advised the court in 1998 that ALRECO had performed the work required by the order. Tobian Metals acquired the property in 1997 and operated the smelter until 2001. A release of petroleum to site soils was reported to MDEQ in 1999. A partial closure was approved for the Site by MDEQ in 2001. When Tobian Metals failed to pay property taxes, the property reverted to Berrien County. The Berrien County Brownfield Authority conducted a limited cleanup and due care response in 2005 that included the removal of dross, bag house dust, an oil-water separator and drains, abandoned containers, and contaminated soils. It also repaired/replaced concrete and asphalt in the manufacturing building in preparation for redevelopment by Ace Companies, LLC (Ace). Ace, the owner of Harbor Light Metals, acquired the property and submitted a Notice of Contaminant Migration as part of a baseline environmental assessment for the property in 2005. According to a company representative, Harbor Light Metals operated the facility between 2005 and 2008, and then ceased operations and filed for bankruptcy in 2008.

EPA spoke with a representative of Reid Group LLC, one of the current Site owners (and successor to Ace and Harbor Light Metals according to the Berrien County Registrar). The representative stated that Reid Group and several other entities still own the property, but that the

1 Aerial photos in attached figures show the site prior to building demolition.

company filed for Chapter 11 and 7 Bankruptcy in 2008. He stated that the property had contained 180,000 square feet of buildings, and that they have been in the process of demolishing buildings and selling scrap.

Inspections by the Michigan DEQ in 2014 documented potentially hazardous aluminum dross and ash, and fabric bags of baghouse dust that appeared to have been abandoned. On April 21, 2014, the Michigan DEQ referred the Site to the EPA for consideration of a time critical removal action.

A. Site Description

1. Removal Site Evaluation

EPA conducted an assessment of the Site on April 24, 2014. Upon initial walkthrough, EPA observed that the majority of the onsite buildings have been demolished, or are in the process of being demolished (to retrieve scrap metal according to the Reid group representative). Most assets appeared to have been removed from the property. Numerous waste piles that were previously within buildings are now exposed to the elements. Much of the Site is covered in ash/dross, debris, insulation, garbage, wooden pallets, scrap, and other miscellaneous containers that are located in uncovered areas of the Site and exposed to all weather-related events.

Near the western small storage buildings (Figure A-2), EPA observed piles of old shingles (suspected asbestos-containing material ("ACM")), and labeled (sulfuric acid and bleach) and unlabeled drums. Within the ruins of the former central building (Figure A-2), EPA observed demolition waste (suspected ACM), stained soils, and waste piles of baghouse dust (approximately 8 feet by 5 feet by 1 foot). Within the still standing northern storage building (Figure A-2) EPA observed numerous drums, debris piles and suspected ACMs. A small furnace/smelter was identified, which the Reid Group representative said was a zinc furnace, and contained significant residue (e.g., mixture of precipitate, salts, and metals).

Various areas of stained soil were observed across the Site. The Reid Group representative said that one was a remnant of burning copper wire and another may have been from dumping of oil during removal of the onsite transformers. No remaining transformers were observed during the walkthrough. A number of building foundations remained. One had filled with water and was retaining water, located along the southern end of the main demolished building (Figure A-3).

A large waste pile composed of aluminum dross and ash, approximately 120 feet by 240 feet by 10 feet (approximately 288,000 cubic feet [ft^3]), was observed along the eastern end of the main demolished building, completely exposed to the elements (Figure A-2). According to the Reid Group representative, this material was removed from the smelter pits during the process of scrapping out the smelter furnaces and piled in its current location. Some of this material was very fine, and blowing wind generated substantial particulate plumes both on and off Site on adjacent properties.

Assessment activities included site reconnaissance, air monitoring, container and waste inventory, radiation screening, Innov-X model Alpha-4000 x-ray fluorescence (XRF) screening of surface soils and waste piles, and collection of samples.

Air monitoring readings were collected using a MultiRAE Plus five-gas monitor, an Area Rae with ammonia (NH_3) and sulfur dioxide (SO_2) sensors, a hydrogen detector, and a Micro-R gamma radiation detector. No readings exceeded background levels during the site assessment. No levels of metals of concern were noted in site XRF readings, however the XRF model EPA used does not detect aluminum.

An inventory of onsite containers was completed. Sixty-three containers of concern were identified during the site assessment. A container inventory is provided in Table 1. Containers included unopened drums of sulfuric acid and bleach, containers of waste oil, containers with unknown contents and ripped bags of baghouse dust.

Sulfuric acid and sodium hypochlorite (bleach) are listed CERCLA hazardous substances in 40 CFR Part 302. The sulfuric acid was also labeled as corrosive and it may also qualify as a RCRA characteristic waste under 40 CFR § 261.3.According to 40 CFR Part 261, characteristically corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks, drums, and barrels.

Table 1
Container Inventory
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

Location	Quantity	Size (gallons)	Type of Container	Percent Full	Contents or Labeling
Northern portion of Site	13	--	Bag	100	Baghouse dust
	10	--	Bag	50	Baghouse dust (ripped/spilling)
	5	5	Bucket	Unknown	Unknown
	2	1	Pail	100	Paint
	30	55	Drum (steel)	0	Empty
	12	55	Drum (steel)	100	Garbage/Debris
	5	55	Drum (steel)	50	Oil
	3	55	Drum (fiber)	0	Empty or Filled with Debris
	1	--	Tote	10	Clear/light yellow liquid
Eastern portion of Site	10	--	Bag	50	Baghouse dust (ripped/spilling)
	5	55	Drum (poly)	0	Unknown
	5	55	Drum (steel)	0	Unknown
Western portion of Site	3	30	Drum (poly)	100	Sulfuric Acid
	2	55	Drum (poly)	100	Bleach
	2	55	Drum (poly)	Unknown	Unlabeled

Notes:
"--" - Not Available
Fiber - Fiberboard
Poly - Polyethylene

Samples were collected from furnace waste piles, baghouse dust piles, stained soils, standing water in a foundation, suspected asbestos containing materials and burned waste piles (Table 2; Figure A-3). EPA collected seven solid waste samples, one liquid waste sample, and one soil sample. The general locations of various wastes are depicted in Figures A-2 and A-3.

Table 2
Sampling Summary
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

Field Sample ID	Sample Date	Sample Time	Sampling Location	Sample Description	Sample Analyses
Solid Waste Samples					
AM-WS01-04242014	4/24/14	1535	Baghouse dust waste pile located on northern end of former building	Gray/black ash	TCL VOC, TCL SVOC, TAL Metal, TCLP Metal, PCB, Total Cyanide, Total Sulfide, Corrosivity (pH), Ignitability (flashpoint), Dioxins
AM-WS02-04242014	4/24/14	1540	Baghouse dust waste pile located on northern end of former building	Gray/black ash	
AM-WS03-04242014	4/24/14	1545	Waste pile located on eastern end of former building	Gray/black ash	TCL VOC, TCL SVOC, TAL Metal, TCLP Metal, PCB, Total Cyanide, Total Sulfide, Corrosivity (pH), and Ignitability (flashpoint)
AM-WS04-04242014	4/24/14	1550	Waste pile located on eastern end of former building	Gray/black ash	
AM-WS05-04242014	4/24/14	1555	Waste pile located on eastern end of former building	Gray/black ash	
AM-WS06-04242014	4/24/14	1610	Burn pile located south of former building	Black ash/debris	
AM-WS07-04242014	4/24/14	1625	Waste pile located inside north building-suspected asbestos containing material	White, Homogeneous, Fibrous	Asbestos
Liquid Waste Sample					
AM-WL01-042422014	4/24/14	1640	Water pit located on southern end of former building	Water, Clear	TCL VOC, TCL SVOC, TAL Metal, PCB, Total Cyanide, Total Sulfide, Corrosivity (pH), and Ignitability (flashpoint)
Soil Sample					
AM-SS01-04242014	4/24/14	1605	Southern property boundary	Black soil/debris	TCL SVOC, TAL Metal, PCB, Total Cyanide, Total Sulfide, Corrosivity (pH), and Ignitability (flashpoint)

Notes:
ID - Identification
PCB - Polychlorinated biphenyl
SVOC - Semivolatile organic compound
TAL - Target Analyte List
TCL - Target Compound List
TCLP - Toxicity Characteristic Leaching Procedure
VOC - Volatile organic compound

The analytical results were compared to the list of CERCLA hazardous substances at 40 CFR Part 302. Listed hazardous substances (particularly semivolatile organic compounds (SVOC) and polychlorinated biphenols (PCB)) were detected in all baghouse dust, waste pile, burned waste and stained soil samples.

The analytical results were compared to the screening criteria in 40 CFR, Part 261, Subpart C (total cyanide, total sulfide, ignitability, corrosivity, and toxicity characteristic leaching potential (TCLP) metals), MDEQ Non-Residential Soil Direct Contact, and EPA Removal Management Levels (RML)-Industrial Soil-Hazard Quotient (HQ) 3 (dioxins). All solid waste, liquid waste, and

soil sample laboratory analytical results were either below the detection limits or below the applicable screening criteria with the exception of dioxins in baghouse dust and aluminum ash/dross (discussed in greater detail below). The full set of analysis results is included as Table 3 (attached).

Baghouse dust

During the site assessment, at least 33 bags of baghouse dust were identified on the Site. Most of the bags were stored outside, and were ripped and spilling. According to the Reid Group representative present during the site assessment, the baghouse dust was collected during smelter operations from the smelter's air emissions filtration system.

Two samples of baghouse dust were collected, and analyzed. Analyses run are listed in Table 2. In addition to typical assessment analyses, baghouse dust samples were analyzed for dioxins, upon the recommendation of Michigan DEQ Air Quality experts, who indicated that dioxins were a key constituent that the facility was attempting to collect in the air filtration system.

Numerous CERCLA hazardous substances (including volatile organic compounds (VOCs), SVOCs, and PCBs) (listed per 40 CFR Part 302) were identified in the samples. These include: cyanide, acetone; xylenes; numerous forms of polycyclic aromatic hydrocarbons (PAHs) anthracene, fluoranthene, pyrenes and naphthalene; and PCBs including Aroclor 1242 and Aroclor 1254.

Samples contained 21 and 20 % aluminum respectively, indicating that this waste may also contain reactive aluminum (described further below).

Dioxins, also listed CERCLA hazardous substances in 40 CFR Part 302, were present at elevated levels in both samples of baghouse dust (Table 4). The concentration of dioxins in the baghouse dust at the Site is above the removal management levels (RML) for the default residential exposure. The Site is within roughly 1,100 feet of residential neighborhoods and there is unrestricted access to the Site. The concentrations of dioxins in the baghouse dust were also above the site specific RML to protect adult and child trespassers who may come to the Site to collect scrap from the property. A risk assessment conducted on these data (included with the Administrative Record for this document) concludes that exposure to the baghouse dust on the property results in an unacceptable level of risk to human health.

Table 4
Solid Waste Sample Dioxin Analytical Results
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

Chemical Name	Location ID	AM-WS01			AM-WS02		
	Field Sample ID	AM-WS01-04242014			AM-WS02-04242014		
	Sample Type	Solid Waste			Solid Waste		
	Sample Date	4/24/2014			4/24/2014		
	RML HQ3 Ind[1]	Result	TEF Result	TEF Result Adjusted	Result	TEF Result	TEF Result Adjusted
Dioxins (ng/kg)							
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (TCDD)		37.1 J	1	37.1	33.6	1	33.6
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN (PECDD)		95.3	1	95.3	77.2	1	77.2
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (HXCDD)		73.3	0.1	7.33	59.3	0.1	5.93
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN (HXCDD)		128	0.1	12.8	112	0.1	11.2
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (HXCDD)		90	0.1	9	72.8	0.1	7.28
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (HPCDD)		934 J	0.01	9.34	667	0.01	6.67
OCTACHLORODIBENZO-P-DIOXIN (OCDD)		5240 J	0.0003	1.572	1910 J	0.0003	0.573
2,3,7,8-TETRACHLORODIBENZOFURAN (TCDF)		1270 J	0.1	127	1110	0.1	111
1,2,3,7,8-PENTACHLORODIBENZOFURAN (PECDF)		671	0.03	20.13	636	0.03	19.08
2,3,4,7,8-PENTACHLORODIBENZOFURAN (PECDF)		1480 P	0.3	444	1370	0.3	411
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (HXCDF)		888	0.1	88.8	835	0.1	83.5
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (HXCDF)		681 P	0.1	68.1	650 P	0.1	65
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (HXCDF)		292	0.1	29.2	267	0.1	26.7
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN (HXCDF)		985	0.1	98.5	872	0.1	87.2
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (HPCDF)		2310 J	0.01	23.1	2210	0.01	22.1
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (HPCDF)		270	0.01	2.7	273	0.01	2.73
OCTACHLORODIBENZOFURAN (OCDF)		1850	0.0003	0.555	2520	0.0003	0.756
TOTAL TCDD TEQ - 2005 WHO (ND = MRL)	152		**1070**			**972**	

Notes:
BOLD and highlighted indicates exceedance
EPA - U.S. Environmental Protection Agency
HQ - Hazard Quotient
ID - Identification
Ind - Industrial
MRL - Method reporting limit
ND - Non-detect
NL - Not listed
ng/kg - Nanogram per kilogram
P - Indicates chlorodiphenyl either interference present at the retention time of the target compound
RML - Removal Management Level
RSL - Regional Screening Level
TEF - Toxicity Equivalency Factor
TEQ - Toxicity Equivalency Quotient
WHO - World Health Organization
1 Screening criteria from EPA RMLs-Industrial Soil-HQ3-based on EPA RSLs-Industrial Soil May 2014

Aluminum Dross/Ash Pile

As described above, a large waste pile, which is reportedly composed of waste removed from secondary aluminum smelter furnace pits, was found on site. According to EPA, secondary aluminum production involves two general categories of operations, scrap pretreatment and smelting/refining. Pretreatment operations include sorting, processing, and cleaning scrap. Smelting/refining operations include cleaning, melting, refining, alloying, and pouring of aluminum recovered from scrap.[2] The prevailing process for secondary aluminum production is smelting in rotary kilns under a salt cover. Solid wastes from the production of secondary

2 http://www.epa.gov/ttnchie1/ap42/ch12/final/c12s08.pdf

aluminum include particulates, pot lining refractory material, and salt slag/cake[3]. In the melting process, dross[4] tends to be localized (a) on the surface, floating (these will be salt fluxes that are less dense than aluminum and light metals and noncrystalline and porous oxides that tend to float, due to the amount of dissolved gases), (b) at the bottom of the furnace, decanted (these will be molten metals more dense than aluminum or oxides with high particle size or nucleating compounds with a high fusion point), and (c) next to the furnace walls, creating crusts[5].

Three samples were collected from the surface of this pile. Sample results indicate that piles contain 17-18% aluminum, levels consistent with those seen in aluminum dross, as well as numerous listed CERCLA hazardous substances. Based on the sampling results from this site, and cited general information about secondary aluminum waste products, it is likely that this pile contains aluminum dross, in addition to ash, salt cake and other metals and materials.

Aluminum dross is sometimes considered a characteristically reactive waste per 40 CFR 261.23[6]. The U.S. Department of Transportation (DOT) and Occupational Safety and Health Administration (OSHA), have categorized aluminum dross as a class 4.3 hazardous material, "Hazardous When Wet." This regulation covers materials that, when wet or in contact with water, can become spontaneously flammable or give off flammable or toxic gas at a rate greater than 1 liter per kilogram per hour.

According to ALCOA, the largest aluminum producer in the US[7], the following hazards are of concern with aluminum dross[8]:

> Small chunks, dust or fines and molten metal are considerably more reactive with the following:
> • Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particularly when the water is entrapped.
> • Heat: Oxidizes at a rate dependent upon temperature and particle size.

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3 http://www.ifc.org/wps/wcm/connect/07a9768048855430b1c4f36a6515bb18/alum_PPAH.pdf?MOD=AJPERES

4 Dross is a mass of solid impurities floating on a molten metal or dispersed in the metal. It forms on the surface of low-melting-point metals such as tin, lead, zinc or aluminum or alloys by oxidation of the metal(s). Dross, as a solid, is distinguished from slag, which is a liquid. Dross product is not entirely waste material; aluminum dross, for example, can be recycled and is used in secondary steelmaking for slag deoxidation (http://en.wikipedia.org/wiki/Dross).

Aluminum Dross is a by-product of aluminum production. There are two forms of dross – white dross and black dross. White dross is formed during the primary aluminum refining process, while black dross is formed during the secondary refining process, which uses relatively large amounts of Chloride salt fluxes. The main constituents of dross are Al and Al2O3, and MgO and MgAl2O4 as well. Black dross contains aluminum and aluminum alloy oxides, 12-18% recoverable aluminum, salts and other materials (https://www.wpi.edu/Pubs/ETD/Available/etd-010612-155135/unrestricted/cdai.pdf).

5 http://www.idalsa.com/wp-content/uploads/2008/09/management-of-the-salt-cake-from-secondary-aluminum-fusion-processes.pdf
6 http://tstark.net/wp-content/uploads/2012/10/JP85.pdf
7 http://en.wikipedia.org/wiki/Alcoa
8 http://www.alcoa.com/global/en/environment/msds_view.asp?LoadMSDS=162679

• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.
• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.

The aluminum dross/ash piles may therefore be characterized as characteristically reactive (D003) wastes, per 40 CFR 261.23 Some of the reactive waste on the surface of the pile may have already reacted with exposure to precipitation, and may be less reactive now, however subsurface waste may still be in a reactive state.

2. Physical location

The Site is located at 900 Alreco Drive, Benton Harbor, Berrien County, Michigan. The location coordinates are 42.1389806° north latitude and 86.4362275° west longitude. The Site is bordered by railroad tracks to the northwest with open land beyond, open land to the northeast, railroad tracks to the southwest with commercial/industrial properties beyond, and the Paw Paw River to the southeast with open land beyond (Figure A-1). Residential properties are located approximately 1,100 feet west-southwest of the Site. Lake Michigan is located approximately 1 mile west of the Site.

An Environmental Justice (EJ) analysis for the Site was conducted. Screening of the surrounding area used Region 5's EJ Screen Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Region 5 has reviewed environmental and demographic data for the area surrounding the site 900 Alreco Drive, Benton Harbor, Berrien County, Michigan, and determined there is a high potential for EJ concerns at this location.

3. Site Characteristics

The Site currently is an abandoned industrial property in a mixed residential/industrial area in the Benton Harbor, Michigan. Benton Harbor is a town of approximately 4.6 square miles, and houses approximately 10,020 people, according to the 2010 US Census. The Site occupies approximately 28 acres. Residential properties are located approximately 1,100 feet west-southwest of the Site. Access to the Site is unrestricted. The property is not fully fenced. Numerous members of the public were observed on the Site during EPA's site assessment collecting scrap metal.

The Paw Paw River forms the southeastern boundary of the site (Figure A-1). Lake Michigan is located approximately 1 mile west of the Site. The Paw Paw River has 39 species of fish including walleye, bass, bluegill, black crappie, and northern pike. The mainstem is a coolwater stream as evidenced by the presence of burbot and mottled sculpin, it also contains hornyhead chub, common shiner, johnny darter, and walleye. Several riparian wetlands provide excellent habitat for northern pike. The fish community near the mouth is influenced by its proximity to Lake Michigan, and Steelhead trout (*Oncorhynchus mykiss*) are stocked there. Potamodromous trout and salmon have access to most of the river system, and are shore-fished in the fall upstream of Hartford. There are 24 registered dams within the Paw Paw River sub-watershed, but these dams are all low head dams or on small tributaries, so potamodromous trout and salmon can migrate into its headwaters at Campbell Creek[9]. The Paw Paw watershed includes rare Great Lakes marshes and floodplain forests, which serve as habitats for migratory birds such as the Prothonotary Warbler (commonly known as the Golden Swamp Warbler), as well as the endangered Mitchell Satyrbutterfly. Other rare species include the Massasauga rattlesnake and the spotted turtle[10,11]. Ecological impacts from this site have not been evaluated.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

As described above, unsecured containers and piles of hazardous substances and characteristically reactive and hazardous wastes are present on the Site. Many of these materials are located outside, or in unsecured buildings presenting a significant threat of release. As detailed above, assessment verified the presence of a variety of hazardous substances, as designated under Section 102 of CERCLA, including dioxin, sulfuric acid, sodium hypochlorite, and others.

The contents of the majority of the containers on the Site are unknown, as most were unlabeled and have not been characterized. The known and suspected hazardous substances located on site have the potential to be released through container degradation or vandalism, and runoff from waste piles could migrate off-site and directly flow into the Paw Paw River and subsurface groundwater. These chemicals could react and cause fire, be ingested by children and pets; tracked off-site by visitors and trespassers; and spread throughout the area, into residential homes, and businesses. Release of these chemicals could impact the Paw Paw River, and the aquatic life within it. There is a potential for direct contact with the hazardous substances because the Site is bordered by residential neighborhoods and located within a city. Access to the Site is not restricted. These hazardous substances are not organized, secured, or maintained in a manner necessary to prevent exposure and/or release.

5. NPL status

The Site is not on the NPL, and has not been proposed for listing.

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9 http://en.wikipedia.org/wiki/Paw_Paw_River
10 http://en.wikipedia.org/wiki/Paw_Paw_River
11 http://www.swmpc.org/downloads/PPRW_Apdx5.pdf

6. Maps, pictures and other graphic representations

A figure detailing the location of the site is included in the attached Site Location Map (Figure A-1). A figure detailing the site features is presented in the attached Site Features Maps (Figure A-2). A figure detailing the sampling locations is presented in the attached Sampling Locations Map (Figures A-3).

B. Other Actions to Date

1. Previous actions

There have been no previous EPA response actions at this Site. As detailed in the Site Conditions section above, the Site has a complex history of ownership and operation, and has undergone several prior cleanups that were either privately or locally funded.

2. Current actions

No actions are currently being taken at the Site. The proposed action will not impede future actions based on available information.

C. State and Local Authorities' Roles

1. State and local actions to date

Michigan DEQ has conducted a number of inspections at this Site. On April 7, 2014 Michigan DEQ issued a Violation Notice (VN) letter to Reid Group LLC, the current property owner, for violations of Michigan's Water Resource Protection and Solid Waste rules observed during an inspection conducted on April 1, 2014. On April 17, 2014 Michigan DEQ received a response to the NOV that included a plan to address cited violations. However, according to Michigan DEQ, to date, Reid Group has failed to implement the plan. On April 21, 2014, Michigan DEQ referred the site to the EPA for consideration of a time critical removal action.

2. Potential for continued state/local response

State and local government assistance may be required during the removal action for those governmental functions that are inherently state and local. Given the exigency of the situation, neither the state nor local governments have the resources to conduct a removal action.

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

EPA's assessment indicates that conditions at the site present an imminent and substantial threat to the public health, or welfare, and the environment and meet the criteria for a

time-critical removal action as provided for in the NCP, 40 C.F.R § 300.415(b)(2). These conditions include, but are not limited to, the following:

1. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

The Paw Paw River is located immediately to the southeast of the Site. Residential properties are located approximately 1,100 feet west-southwest of the Site. Large sections of fence were either missing or broken along all sides of the Site. Numerous scrappers were observed sifting through the various waste piles for scrap materials. The buildings were in various stages of demolition/salvage. A majority of the Site is covered in building debris (suspected ACM), insulation, garbage, wooden pallets, scrap, and other miscellaneous containers. Uncontrolled hazardous substances including reactive materials, toxic substances and highly caustic substances were documented during the site assessment. Listed CERCLA hazardous substances present on site include sulfuric acid, sodium hypochlorite, dioxin, cyanide, acetone; xylenes; numerous forms of anthracene, fluoranthene, ptyrenes and naphthalene; and PCBs including Aroclor 1242 and Aroclor 1254, among other materials. Many waste containers are in poor condition. Oil-stained surfaces were observed where transformers been located outside the buildings. During the site assessment, the public was observed accessing the site property and collecting scrap metal.

Uncontrolled hazardous substances at the Site could be released to soil and groundwater, the atmosphere, and nearby surface waterways. Aluminum dross/ ash piles contained fine materials that appeared to easily become airborne and dispersed to nearby populations. Potential exposure through each of these migration pathways could cause imminent endangerment to human health, welfare, or the environment. Overall, the potential for exposure to hazardous substances stored at the Site is high, especially considering that the on-site buildings are no longer occupied.

There is a risk of accidental release of uncontrolled hazardous wastes from the Site based on the following conditions observed during the site assessment: the presence of uncontrolled hazardous substances, the poor condition of hazardous substance containers, unrestricted site access, signs of vandalism inside and outside the buildings, and the close proximity of surface waterways northeast of the Site. Uncontrolled hazardous substances at the Site could be released to soil and groundwater, the atmosphere, and nearby surface waterways.

The hazardous substances documented on site to date have well documented effects on human health. The health effects as determined by the Agency for Toxic Substance and Disease Registry (ATSDR) are detailed as follows:

Sulfuric Acid

Touching sulfuric acid will burn skin, and breathing sulfuric acid can result in tooth erosion and respiratory tract irritation. Drinking sulfuric acid can burn the mouth, throat,

and stomach; it can result in death. If sulfuric acid gets in the eyes, it will cause the eyes to water and burn.

Sodium Hypochlorite

Sodium and calcium hypochlorite are used primarily as bleaching agents or disinfectants. They are components of commercial bleaches, cleaning solutions, and disinfectants for drinking water and waste water purification systems and swimming pools. The toxic effects of sodium and calcium hypochlorite are due primarily to the corrosive properties of hypochlorite. If you ingest a small amount of household bleaches (3-6% hypochlorite) you may experience gastrointestinal irritation. Ingestion of more concentrated commercial bleach (10% or higher hypochlorite) or hypochlorite powder may cause severe corrosive injuries to the mouth, throat, esophagus and stomach with bleeding, perforation, and eventually death. Permanent scars and narrowing of the esophagus may occur in survivors of severe intoxication.

Inhalation of chlorine gas released from concentrated hypochlorite solutions may cause nasal irritation, sore throat, and coughing. Contact of strong hypochlorite solutions with skin may cause burning pain, inflammation, and blisters. Contact of the eye with mild bleach solutions may cause mild and transitory irritation. More concentrated solutions may cause severe eye injuries. Long-term exposure to low levels of hypochlorite can cause dermal irritation.

It is not known if exposure to chlorine can result in reproductive effects.

Dioxins

Dioxins (CDDs) are a family of 75 chemically related compounds commonly known as chlorinated dioxins. One of these compounds is called 2,3,7,8-TCDD. It is one of the most toxic of the CDDs and is the one most studied. The most noted health effect in people exposed to large amounts of 2,3,7,8-TCDD is chloracne. Chloracne is a severe skin disease with acne-like lesions that occur mainly on the face and upper body. Other skin effects noted in people exposed to high doses of 2,3,7,8-TCDD include skin rashes, discoloration, and excessive body hair. Changes in blood and urine that may indicate liver damage also are seen in people. Exposure to high concentrations of CDDs may induce long-term alterations in glucose metabolism and subtle changes in hormonal levels.

In certain animal species, 2,3,7,8-TCDD is especially harmful and can cause death after a single exposure. Exposure to lower levels can cause a variety of effects in animals, such as weight loss, liver damage, and disruption of the endocrine system. In many species of animals, 2,3,7,8-TCDD weakens the immune system and causes a decrease in the system's ability to fight bacteria and viruses. In other animal studies, exposure to 2,3,7,8-TCDD has caused reproductive damage and birth defects. Some animal species exposed to CDDs during pregnancy had miscarriages and the offspring of animals exposed to

2,3,7,8-TCDD during pregnancy often had severe birth defects including skeletal deformities, kidney defects, and weakened immune responses.

Cyanide

The severity of the harmful effects following cyanide exposure depends in part on the form of cyanide, such as hydrogen cyanide gas or cyanide salts. Exposure to high levels of cyanide for a short time harms the brain and heart and can even cause coma and death. Workers who inhaled low levels of hydrogen cyanide over a period of years had breathing difficulties, chest pain, vomiting, blood changes, headaches, and enlargement of the thyroid gland.

Some of the first indications of cyanide poisoning are rapid, deep breathing and shortness of breath, followed by convulsions (seizures) and loss of consciousness. These symptoms can occur rapidly, depending on the amount eaten. The health effects of large amounts of cyanide are similar, whether you eat, drink, or breathe it; cyanide uptake into the body through the skin is slower than these other means of exposure. Skin contact with hydrogen cyanide or cyanide salts can irritate and produce sores.

Acetone

Acetone goes into the blood which then carries it to all the organs in your body. If it is a small amount, the liver breaks it down to chemicals that are not harmful and uses these chemicals to make energy for normal body functions. Breathing moderate- to-high levels of acetone for short periods of time, however, can cause nose, throat, lung, and eye irritation; headaches; light-headedness; confusion; increased pulse rate; effects on blood; nausea; vomiting; unconsciousness and possibly coma; and shortening of the menstrual cycle in women.

Swallowing very high levels of acetone can result in unconsciousness and damage to the skin in the mouth. Skin contact can result in irritation and damage to the skin.

Health effects from long-term exposures are known mostly from animal studies. Kidney, liver, and nerve damage, increased birth defects, and lowered ability to reproduce (males only) occurred in animals exposed long-term.

Xylene

No health effects have been noted at the background levels that people are exposed to on a daily basis.

High levels of exposure for short or long periods can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in ones's sense of balance. Exposure of people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time;

memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

PCBs

The most commonly observed health effects in people exposed to large amounts of PCBs are skin conditions such as acne and rashes. Studies in exposed workers have shown changes in blood and urine that may indicate liver damage. PCB exposures in the general population are not likely to result in skin and liver effects. Most of the studies of health effects of PCBs in the general population examined children of mothers who were exposed to PCBs.

Animals that ate food containing large amounts of PCBs for short periods of time had mild liver damage and some died. Animals that ate smaller amounts of PCBs in food over several weeks or months developed various kinds of health effects, including anemia; acne-like skin conditions; and liver, stomach, and thyroid gland injuries. Other effects of PCBs in animals include changes in the immune system, behavioral alterations, and impaired reproduction. PCBs are not known to cause birth defects.

The EPA and the International Agency for Research on Cancer (IARC) have determined that PCBs are probably carcinogenic to humans.

Napthalene

Exposure to large amounts of naphthalene may damage or destroy some of red blood cells. This could result in having too few red blood cells until the body replaces the destroyed cells. This condition is called hemolytic anemia. Some symptoms of hemolytic anemia are fatigue, lack of appetite, restlessness, and pale skin. Exposure to large amounts of naphthalene may also cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin. Animals sometimes develop cloudiness in their eyes after swallowing high amounts of naphthalene. It is not clear whether this also develops in people. Rats and mice that breathed naphthalene vapors daily for a lifetime developed irritation and inflammation of their nose and lungs. It is unclear if naphthalene causes reproductive effects in animals; most evidence says it does not. Based on the results from animal studies, the Department of Health and Humans Services (DHHS) concluded that naphthalene is reasonably anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) concluded that naphthalene is possibly carcinogenic to humans. The EPA determined that naphthalene is a possible human carcinogen.

PAHs

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people. The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

2. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

Hazardous wastes or substances on the Site can become compromised and containment is not present. Intentional or accidental releases of hazardous substances from the Site could enter the Paw Paw River, which borders the Site, and flows into Lake Michigan, approximately 1 mile from the Site.

A release from containerized or outdoor waste piles at the Site to local surface water or groundwater could impact aquatic life, including the threatened and endangered species and their habitats that exist within this watershed.

Materials in these piles have been documented by Michigan DEQ to be migrating offsite to the Paw Paw River during precipitation events. The Paw Paw flows into Lake Michigan, approximately 1 mile from the Site. The Benton Harbor Township public water system is supplied by an offshore surface water inlet in Lake Michigan. A release from the Site could be transported through surface water and groundwater to the Paw Paw River and Lake Michigan potentially effect drinking water supplies and as well as sensitive ecosystems.

3. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release

Drums, small containers, bags, and piles containing hazardous substances or potentially hazardous chemicals, including toxic substances are present at the Site. Many of the containers are outside and in poor condition, open, ripped and/or corroded. Access to the Site is not secured, and increases the likelihood of trespassing and vandalism. Weathering and activity of trespassers could cause containers to breach, releasing the contents of the containers into the environment.

4. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Benton Harbor receives an average yearly precipitation of 36 inches. Average temperatures range from 20 to 83 degrees Fahrenheit (°F).

Containerized wastes inside the site buildings and stored outdoors are exposed to the elements, including harsh winters and freeze/thaw cycles typical of northwestern Michigan. The buildings are in various stages of being demolished and salvaged. Therefore containerized wastes in the buildings also are exposed to a wide range of ambient temperatures throughout the year. During the site assessment, many containers were in poor or damaged condition.

As previously discussed, large dross/ash piles and ripped and spilling bags of baghouse dust are uncovered outside on the Site. Materials in these piles have been documented by Michigan DEQ to be migrating offsite to the Paw Paw River during precipitation events. Additionally, exposing the uncovered piles of potentially water reactive metals to precipitation is a significant concern.

A majority of the Site is covered in building debris (suspected ACM), insulation, garbage, wooden pallets, scrap, and other miscellaneous containers that are located in uncovered areas of the Site and exposed to all weather related events.

Weather conditions such as heavy rainfall, high winds, snow melt, and flooding could infiltrate the buildings and further degrade waste containers and increase the likelihood of off-site migration of hazardous wastes.

5. Threat of fire or explosion.

Currently, there are approximately 288,000 cubic feet of dross/ash in piles on site and 33 ripped and spilling bags of baghouse dust on the Site. Solid waste samples collected from baghouse dust and waste piles contained 17-25% aluminum (170,000-250,000 milligrams per kilogram [mg/kg]), concentrations consistent with the presence of a characteristically reactive material, aluminum dross. The possible reactivity threat due to water is a fire concern. In situations with aluminum dross, contact with water can generate flammable and toxic gases such as oxides of sulfur and ammonia. In addition, hydrogen gas could be emitted from the waste piles.

6. The availability of other appropriate federal or state response mechanisms to respond to the release.

On April 21, 2014, Michigan DEQ sent a letter to the EPA recommending that the Site be referred to the Removal Program for a removal action, as the State does not have the resources to undertake the removal action. No other local, federal or state response mechanism is available to respond in a timely manner given the exigencies of the situation.

IV. ENDANGERMENT DETERMINATION

Given the site conditions, the nature of the known and suspected hazardous substances on site, and the potential exposure pathways described in Sections II and III, actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. EXEMPTION FROM STATUATORY LIMITS

Section 104 (c) of CERCLA, as amended by the Superfund Amendment and Reauthorization Act (SARA) limits the Federal emergency response to $2 million unless three criteria are met. The quantities and levels of hazardous substances at the Alreco Site warrant the $2 million exemption based on the following factors:

A) There is an immediate risk to public health or welfare or the environment;

The Site is located in a mixed industrial and residential neighborhood. Trespassing occurs at the Site on a regular basis, and fencing is not present around the Site, which facilitates trespass. During a Site walk the OSC observed people walking onto the property and through the Site, and collecting scrap metal. People are and will continue to be directly exposed to the contamination at the Site if it is not addressed.

Hazardous substances have been documented in waste piles and containers on site. The wastes are not secured and could be easily spread throughout the community and into the Paw Paw River by wind, rain, trespassers and container failure. The wastes also present a threat of reaction, potentially resulting in an onsite fire or explosion.

B) Continued response actions are immediately required to prevent, limit, or mitigate an emergency;

The continued presence of hazardous substances at the Site constitutes an imminent threat to human health, welfare, and the environment. Because of the recent demolition and lack of Site security, Site conditions have deteriorated, so that the need to respond has become even more urgent. The threat of release of these materials, if left unmitigated, could impact the environment and surrounding residential neighborhoods.

C) Assistance will not otherwise be provided on a timely basis;

In a letter dated April 21, 2014, MDEQ requested that US EPA assist the state by conducting a time-critical removal action at the Alreco Site. Neither MDEQ nor any local government has adequate resources to conduct a time-critical removal action of this magnitude.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The response actions described in this memorandum directly address actual or potential releases of hazardous substances at the site, which may pose an imminent and substantial endangerment to public health, or welfare, or the environment. Removal activities on-site will include:

a) Developing and implementing a site-specific Health and Safety Plan, including an Air Monitoring Plan, and a site Emergency Contingency Plan;

b) Developing and implementing a Site Work Plan that includes a Site Security Plan;

c) Securing, characterizing, and sampling known and suspected hazardous substances, including containers of liquid, baghouse dust, aluminum dross/ash waste piles, at the site;

d) Consolidating and packaging hazardous substances, pollutants and contaminants, including containers of liquid, baghouse dust, aluminum dross/ash waste piles for transportation and off-site disposal;

e) Decontaminating contaminated structures (primarily foundations) as necessary;

f) Transporting and disposing of all characterized or identified hazardous substances, pollutants, wastes, or contaminants that pose a substantial threat of release at a Resource Conservation and Recovery Act/CERCLA-approved disposal facility in accordance with EPA's Off-site Rule (40 C.F.R. § 300.440), as applicable; and

g) Taking any other response actions to address any release or threatened release of a hazardous substance, pollutant and contaminant that the U.S. EPA OSC determines may pose an imminent and substantial endangerment to the public health or the environment.

The response action proposed herein will mitigate the threats at the site by properly identifying, consolidating, and packaging hazardous substances and materials on-site. The consolidated materials will be removed and ultimately disposed of off-site. Additional site activities may include security, perimeter air monitoring, and decontamination on the Site, as needed to complete the removal action. This response action will be conducted in accordance with Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1) and Section 300.415 of the NCP, 40 C.F.R. § 300.415, to abate or eliminate the immediate threat posed to public health and/or the environment by the presence of the hazardous substances. No uncontrolled hazardous substances are expected to remain at the site once the removal action is completed.

The removal action will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal site control consistent with the provisions of Section 300.415(l) of the NCP. Removal of hazardous material is expected to eliminate the need for post-removal site control.

2. Contribution to remedial performance

The proposed action will not impede future actions based on available information. No further action is anticipated once the proposed removal action is completed.

3. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable.

4. Applicable or relevant and appropriate requirements (ARARs)

Applicable or relevant and appropriate requirements (ARAR) of Federal and State law identified in a timely manner will be complied with to the extent practicable considering the exigencies of the situation. The OSC sent a letter dated July 7, 2014, requesting ARARs to Mr. Michael Baranoski, Michigan DEQ, Remediation Division, Kalamazoo District Office.

Federal

While it is not strictly an ARAR, all hazardous substances removed off-site pursuant to this removal action for treatment, storage, and disposal will be treated, stored, or disposed of at a facility in compliance, as the EPA determines, with the Off-Site Rule, 40 C.F.R. § 300.440.

State

On July 7, 2014, Michigan DEQ responded to the EPA ARAR request with a broad list of State hazardous regulations. The OSC will evaluate these ARARs, and if applicable, attempt to comply with these and other known State ARARs to the extent practicable.

5. Project schedule

The proposed activities listed in Section V of this memorandum will require an estimated 44 on-site working days to complete.

6. Estimated costs

REMOVAL ACTION PROJECT CEILING ESTIMATE	
Extramural Costs:	
Regional Removal Allowance Costs:	
Total Cleanup Contractor Allowance Costs (This cost category includes estimates for ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with Other Federal Agencies. Includes a 20% contingency)	$ 2,546,059
Other Extramural Costs Not Funded from the Regional Allowance:	
Total START, including multiplier costs	$ 59,248
Subtotal Extramural Costs	$ 2,605,307
Extramural Costs Contingency (20% of Subtotal)	$ 521,061
TOTAL REMOVAL ACTION PROJECT CEILING	$ 3,126,368

The response actions described in this memorandum directly address the actual or threatened release of hazardous substances, pollutants or contaminants at the Site which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

All hazardous substances, pollutants or contaminants removed off-site pursuant to this removal action for treatment, storage and disposal shall be treated, stored, or disposed at a facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 C.F.R. § 300.440.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the site conditions, the nature of the hazardous substances on-site, the potential exposure pathways to nearby populations described in Sections II, III, and IV above, and the actual or threatened release of hazardous substances from the Site, failing to take or delaying action may present an imminent and substantial endangerment to public health, welfare or the environment.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this site is contained in the Enforcement Confidential Addendum.

($3,126,368+ $119,748) + (56.41% x $3,246,116) = $5,077,250

The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $5,077,250[12].

X. RECOMMENDATION

This decision document represents the selected removal action for the Alreco Metals site in Benton Harbor, Berrien County, Michigan. This document has been developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the site, see Attachment II. Conditions at the Site meet the NCP § 300.415(b)(2) criteria for a time-critical removal action and I recommend your approval.

The total removal project ceiling, if approved, will be $3,126,368. Of this, an estimated $3,067,120 may be used for the cleanup contractor costs. You may indicate your decision by signing below.

APPROVE: Tom Yamaha for RK DATE: August 8, 2014
Director, Superfund Division

DISAPPROVE: _____ DATE: _____
Director, Superfund Division

[12] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost account methodology effective October, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

Enforcement Addendum

Figures:

A-1: Site Location Map
A-2: Site Features Map
A-3: Sampling Locations Map

Tables:

1: Container Inventory
2: Sampling Summary
3: Solid Waste, Liquid Waste, and Soil Sample Analytical Results
4: Solid Waste Sample Dioxin Analytical Results

Attachments:

I. Detailed Cleanup Contractor Cost Estimate
II. Administrative Record Index
III. Independent Government Cost Estimate

cc: Sherry Fielding, U.S. EPA, 5104A
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BCC PAGE HAS BEEN REDACTED

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

FIGURE A-1

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

SITE LOCATION MAP FOR ALRECO METALS SITE
BENTON HARBOR, BERRIEN COUNTY, MICHIGAN

ORIGINAL
AUGUST 2014

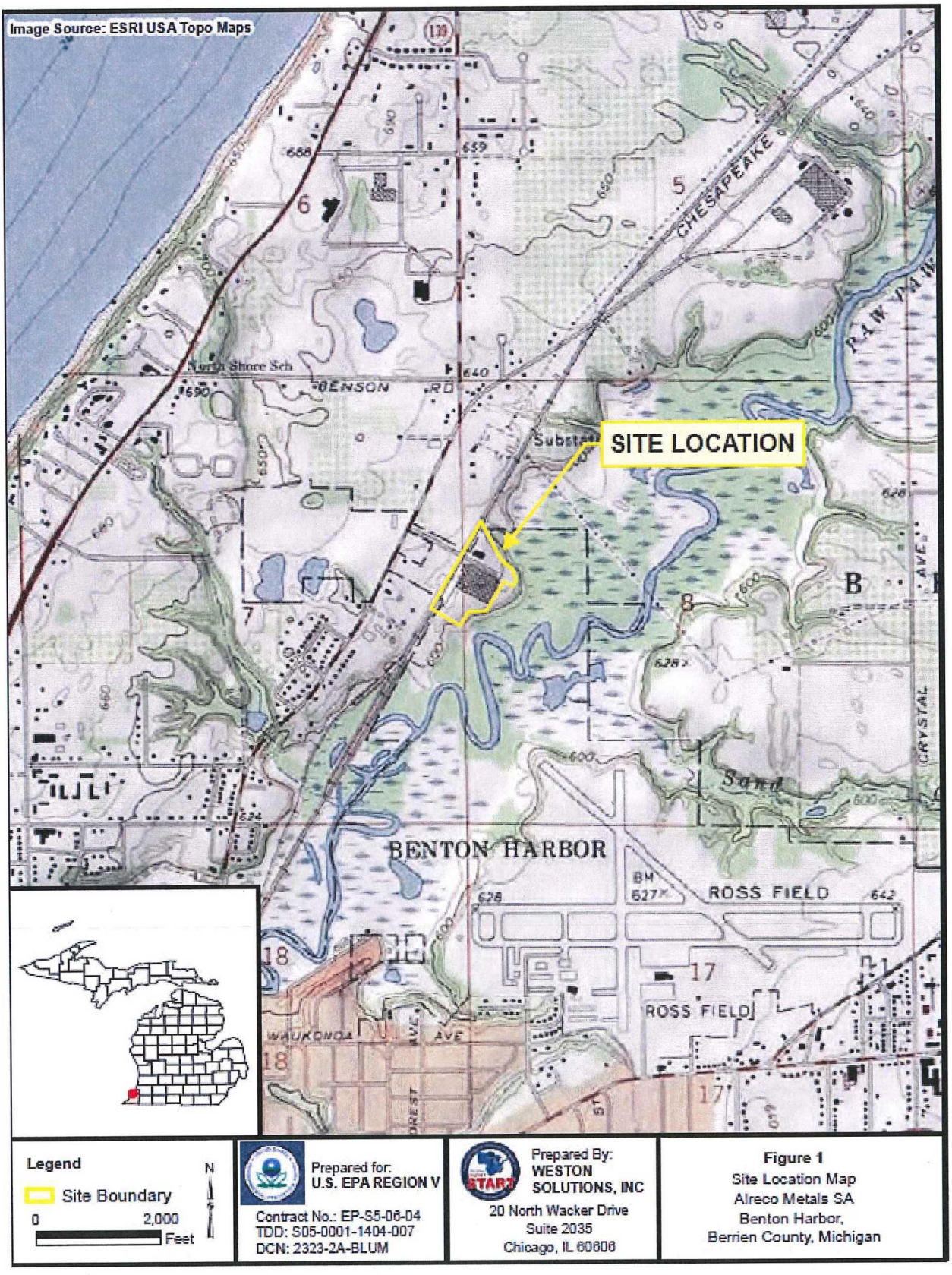


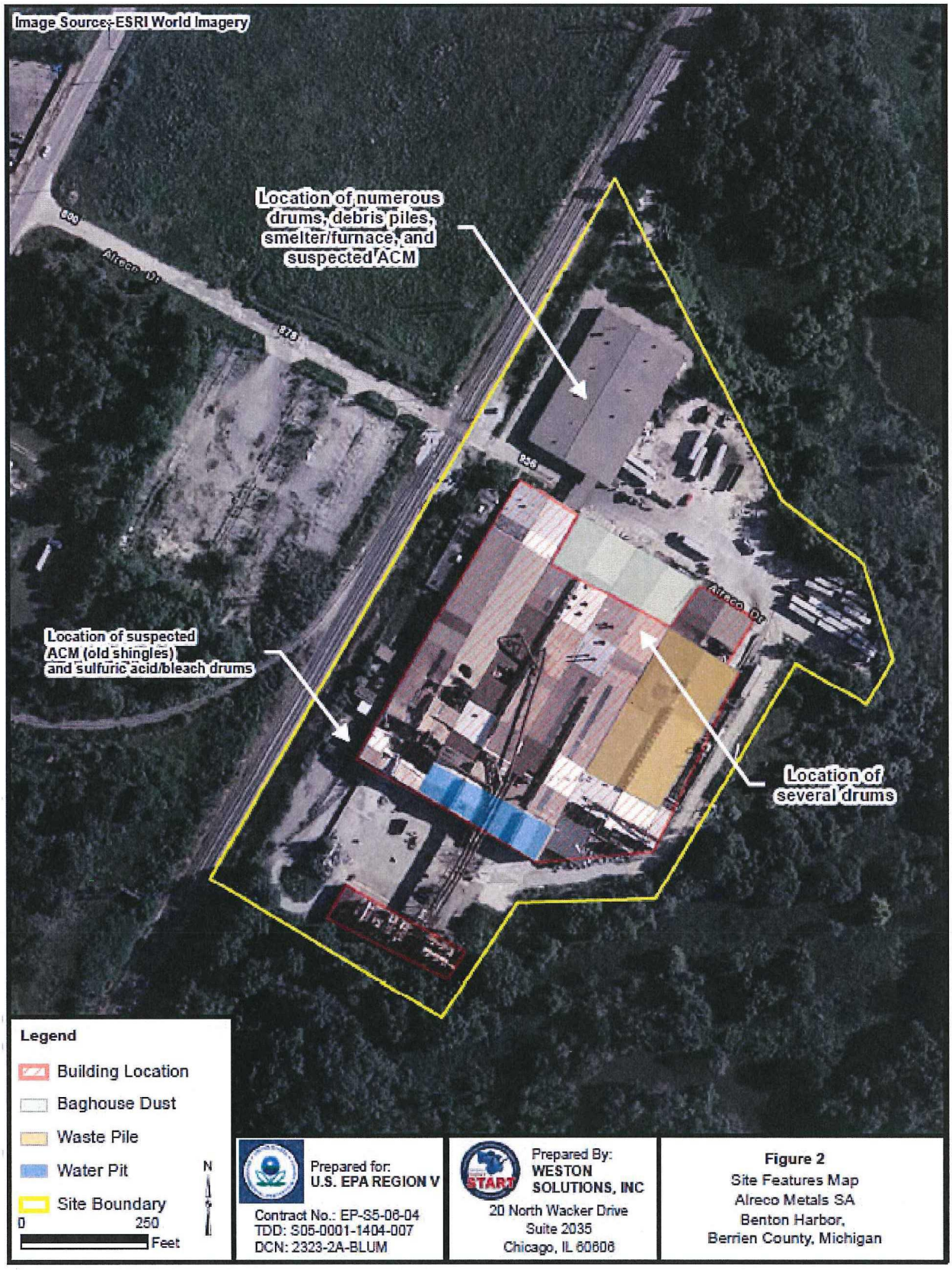
Image Source: ESRI USA Topo Maps
SITE LOCATION
BENTON HARBOR
ROSS FIELD
ROSS FIELD
BENSON RD
North Shore Sch
CHESAPEAKE
WAUKONDA AVE
Legend
Site Boundary
0
2,000
Feet
N
Prepared for:
U.S. EPA REGION V
Contract No.: EP-S5-06-04
TDD: S05-0001-1404-007
DCN: 2323-2A-BLUM
Prepared By:
WESTON SOLUTIONS, INC
20 North Wacker Drive
Suite 2035
Chicago, IL 60606
Figure 1
Site Location Map
Alreco Metals SA
Benton Harbor,
Berrien County, Michigan

FIGURE A-2

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

PROPERTY BOUNDARY MAP FOR ALRECO METALS SITE
BENTON HARBOR, BERRIEN COUNTY, MICHIGAN

ORIGINAL
AUGUST 2013



Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0001-1404-007
DCN: 2323-2A-BLUM

Prepared By:
WESTON SOLUTIONS, INC
20 North Wacker Drive
Suite 2035
Chicago, IL 60606

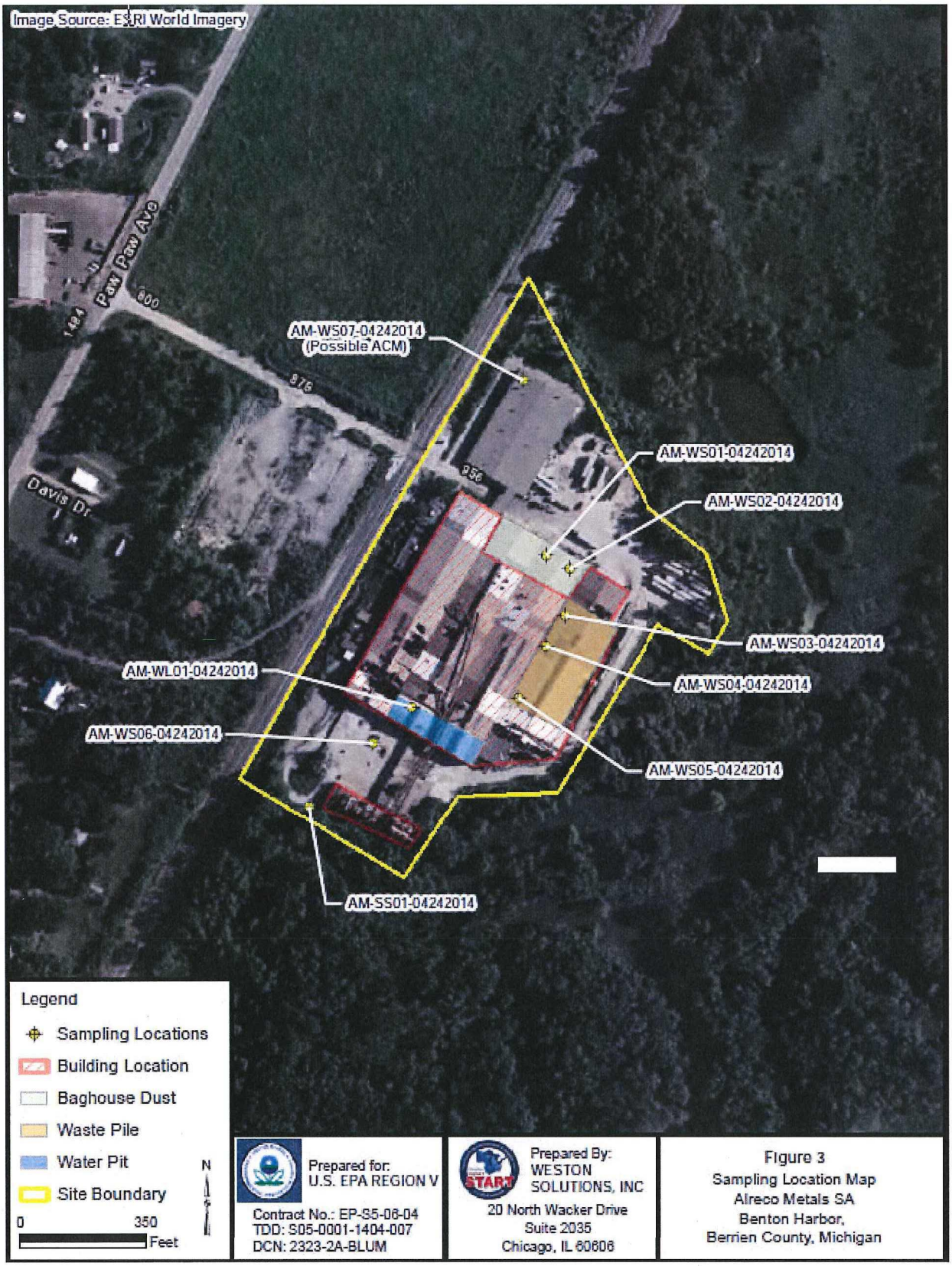
Figure 2
Site Features Map
Alreco Metals SA
Benton Harbor,
Berrien County, Michigan

FIGURE A-3

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

SITE FEATURES MAP FOR ALRECO METALS SITE
BENTON HARBOR, BERRIEN COUNTY, MICHIGAN

ORIGINAL
AUGUST 2014



Prepared for:
U.S. EPA REGION V
Contract No.: EP-S5-06-04
TDD: S05-0001-1404-007
DCN: 2323-2A-BLUM

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Figure 3
Sampling Location Map
Alreco Metals SA
Benton Harbor,
Berrien County, Michigan

TABLE 3

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

SOLID WASTE, LIQUID WASTE AND SOIL SAMPLE ANALYTICAL RESULTS FOR ALRECO METALS SITE BENTON HARBOR, BERRIEN COUNTY, MICHIGAN

ORIGINAL
AUGUST 2014

Table 3
Solid Waste, Liquid Waste, and Soil Sample Analytical Results
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

	Location ID		AM-WS01	AM-WS02	AM-WS03	AM-WS04	AM-WS05	AM-WS06	AM-WS07	AM-WL01	AM-SS01
	Field Sample ID		AM-WS01-04242014	AM-WS02-04242014	AM-WS03-04242014	AM-WS04-04242014	AM-WS05-04242014	AM-WS06-04242014	AM-WS07-04242014	AM-WL01-04242014	AM-SS01-04242014
	Sample Type		Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Liquid Waste	Soil
	Sample Date		4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014
Chemical Name	40 CFR[1]	MDEQ DC[2]	Result								
General Parameters											
IGNITABILITY_FLASHPOINT (°F)	< 140	NL	200 >	200 >	200 >	200 >	200 >	200 >	NA	200 >	200 >
CYANIDE (mg/kg)	NL	250	1.7	0.58	0.65 U	0.67 U	0.81 U	0.67 U	NA	0.005 U	0.56
SULFIDE (mg/kg)	NL	NL	130 U	110 U	130 U	130 U	160 U	130 UJ	NA	1 U	110 U
CORROSIVITY_pH (S.U.)	<=2 or >=12.5	NL	7.6	7.5	8.5	8.4	7.4	7.6	NA	7.58	7.9
Asbestos (%)											
Cellulose	NL	NL	NA	NA	NA	NA	NA	NA	>1<=3	NA	NA
Fiberglass	NL	NL	NA	NA	NA	NA	NA	NA	>90<=100	NA	NA
Non-Fibrous	NL	NL	NA	NA	NA	NA	NA	NA	>1<=3	NA	NA
Other Fibers	NL	NL	NA	NA	NA	NA	NA	NA	ND	NA	NA
Resin/Binder	NL	NL	NA	NA	NA	NA	NA	NA	ND	NA	NA
Amosite	NL	NL	NA	NA	NA	NA	NA	NA	ND	NA	NA
Anthophyllite	NL	NL	NA	NA	NA	NA	NA	NA	ND	NA	NA
Chrysotile	NL	NL	NA	NA	NA	NA	NA	NA	ND	NA	NA
Crocidolite	NL	NL	NA	NA	NA	NA	NA	NA	ND	NA	NA
Tremolite-Actinolite	NL	NL	NA	NA	NA	NA	NA	NA	ND	NA	NA
TAL Metals (Waste Solid/Soil = mg/kg, Waste Liquid = mg/L)											
ALUMINUM	NL	370000	210000	200000	170000	170000	180000	250000	NA	0.22	25000
ANTIMONY	NL	670	49	230 U	250 U	24	42	26 U	NA	0.005 U	7.5
ARSENIC	NL	37	25 U	230 U	250 U	24 U	28 U	26 U	NA	0.005 U	4.5
BARIUM	NL	130000	190	230 U	250 U	130	250	1400	NA	10	200
BERYLLIUM	NL	1600	10 U	91 U	100 U	9.5 U	11 U	10 U	NA	0.002 U	0.92 U
CADMIUM	NL	2100	45	91 U	100 U	9.5 U	46	10 U	NA	0.002 U	5.8
CALCIUM	NL	NL	18000	26000	25000 U	34000	49000	5600	NA	140	45000
CHROMIUM	NL	NL	630	380	330	440	450	280	NA	0.005 U	71
COBALT	NL	9000	25 U	230 U	250 U	24 U	28 U	26 U	NA	0.005 U	4.2
COPPER	NL	73000	6600	6200	5400	6600	5700	7900	NA	0.015	760
IRON	NL	580000	19000	30000	32000	24000	17000	20000	NA	0.18	24000
LEAD	NL	900	420	350	280	260	420	610	NA	0.005 U	69
MAGNESIUM	NL	1000000	18000	12000	12000	9700	18000	6700	NA	43	9600
MANGANESE	NL	90000	2200	1400	1200	1300	1700	1300	NA	0.058	730
MERCURY	NL	580	1.7	0.98	0.26	0.043	1.3	0.067	NA	0.0002 U	0.37
NICKEL	NL	150000	240	230 U	250 U	270	260	240	NA	0.005 U	37
POTASSIUM	NL	NL	59000	64000	30000	32000	53000	1000 U	NA	340	1300
SELENIUM	NL	9600	25 U	230 U	250 U	24 U	28 U	26 U	NA	0.005 U	3.3
SILVER	NL	9000	51 U	230 U	250 U	24 U	28 U	26 U	NA	0.005 U	2.3 U
SODIUM	NL	NL	81000	79000	40000	45000	66000	3000	NA	500	760
THALLIUM	NL	130	25 U	230 U	250 U	24 U	28 U	26 U	NA	0.005 U	2.3 U

Table 3
Solid Waste, Liquid Waste, and Soil Sample Analytical Results
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

		Location ID	AM-WS01	AM-WS02	AM-WS03	AM-WS04	AM-WS05	AM-WS06	AM-WS07	AM-WL01	AM-SS01
		Field Sample ID	AM-WS01-04242014	AM-WS02-04242014	AM-WS03-04242014	AM-WS04-04242014	AM-WS05-04242014	AM-WS06-04242014	AM-WS07-04242014	AM-WL01-04242014	AM-SS01-04242014
		Sample Type	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Liquid Waste	Soil
		Sample Date	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014
Chemical Name	40 CFR[1]	MDEQ DC[2]	Result								
VANADIUM	NL	5500	55	230 U	250 U	26	36	39	NA	0.005 U	18
ZINC	NL	630000	7400	29000	48000	5200	5800	6200	NA	0.1 U	780
TCLP Metals (mg/L)											
ARSENIC, TCLP	5	NL	0.01 U	0.016	0.01 U	0.1 U	0.1 U	0.1 U	NA	NA	NA
BARIUM, TCLP	100	NL	3.6	1.1	0.98	0.87	1.2	20	NA	NA	NA
CADMIUM, TCLP	1	NL	0.095	0.012	0.037	0.041	0.02 U	0.02 U	NA	NA	NA
CHROMIUM, TCLP	5	NL	0.17	0.18	0.01 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
LEAD, TCLP	5	NL	0.21	0.072	0.053	0.1 U	0.1 U	0.97	NA	NA	NA
SELENIUM, TCLP	1	NL	0.02 U	0.02 U	0.01 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
SILVER, TCLP	5	NL	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	NA	NA	NA
MERCURY, TCLP	0.2	NL	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	NA	NA	NA
PCBs (Waste Solid/Soil = mg/kg, Waste Liquid = mg/L)											
AROCLOR 1016	NL	NL	0.11 U	0.093 U	0.11 U	0.11 U	0.13 U	0.11 U	NA	0.0002 U	0.092 U
AROCLOR 1221	NL	NL	0.11 U	0.093 U	0.11 U	0.11 U	0.13 U	0.11 U	NA	0.0002 U	0.092 U
AROCLOR 1232	NL	NL	0.11 U	0.093 U	0.11 U	0.11 U	0.13 U	0.11 U	NA	0.0002 U	0.092 U
AROCLOR 1242	NL	NL	2	1.3	0.88	0.11 U	0.32	0.11 U	NA	0.0002 U	0.092 U
AROCLOR 1248	NL	NL	0.11 U	0.093 U	0.11 U	0.11 U	0.13 U	0.11 U	NA	0.0002 U	0.092 U
AROCLOR 1254	NL	NL	0.44	0.25	0.26	0.11 U	0.15	0.11 U	NA	0.0002 U	0.092 U
AROCLOR 1260	NL	NL	0.11 U	0.093 U	0.11 U	0.11 U	0.13 U	0.11 U	NA	0.0002 U	0.53
TCL VOCs (Waste Solid/Soil = mg/kg, Waste Liquid = mg/L)											
1,1,1-TRICHLOROETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,1,2,2-TETRACHLOROETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,1,2-TRICHLOROETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,1-DICHLOROETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,1-DICHLOROETHYLENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,2,4-TRICHLOROBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,2-DIBROMO-3-CHLOROPROPANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,2-DIBROMOETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,2-DICHLOROBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,2-DICHLOROETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
1,2-DICHLOROPROPANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.002 U	NA
1,4-DICHLOROBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.002 U	NA
2-BUTANONE	NL	NA	0.51 U	0.46 U	0.26 U	0.27 U	0.63 U	0.27 U	NA	0.005 U	NA
4-METHYL-2-PENTANONE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.005 U	NA
ACETONE	NL	NA	0.3	0.51	0.14	0.13 U	0.47	0.13 U	NA	0.02 U	NA
BENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
BROMODICHLOROMETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
BROMOMETHANE	NL	NA	0.19 U	0.17 U	0.099 U	0.099 U	0.24 U	0.1 U	NA	0.001 U	NA
CARBON DISULFIDE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.0025 U	NA

Table 3
Solid Waste, Liquid Waste, and Soil Sample Analytical Results
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

	Location ID		AM-WS01	AM-WS02	AM-WS03	AM-WS04	AM-WS05	AM-WS06	AM-WS07	AM-WL01	AM-SS01
	Field Sample ID		AM-WS01-04242014	AM-WS02-04242014	AM-WS03-04242014	AM-WS04-04242014	AM-WS05-04242014	AM-WS06-04242014	AM-WS07-04242014	AM-WL01-04242014	AM-SS01-04242014
	Sample Type		Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Liquid Waste	Soil
	Sample Date		4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014
Chemical Name	40 CFR[1]	MDEQ DC[2]	Result								
CARBON TETRACHLORIDE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CFC-11	NL	NA	3.6	0.92	3.4	0.77	0.095 U	0.04 U	NA	0.001 U	NA
CFC-12	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CHLORINATED FLUOROCARBON	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CHLOROBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CHLORODIBROMOMETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CHLOROETHANE	NL	NA	0.25 U	0.23 U	0.13 U	0.13 U	0.32 U	0.13 U	NA	0.001 U	NA
CHLOROFORM	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CHLOROMETHANE	NL	NA	0.25 U	0.23 U	0.13 U	0.13 U	0.32 U	0.13 U	NA	0.001 U	NA
CIS-1,2-DICHLOROETHENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CIS-1,3-DICHLOROPROPENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
CYCLOHEXANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.005 U	NA
DICHLOROMETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.005 U	NA
ETHYLBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
ISOPROPYLBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
M-DICHLOROBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.002 U	NA
METHYL ACETATE	NL	NA	0.51 U	0.46 U	0.26 U	0.27 U	0.63 U	0.27 U	NA	0.002 U	NA
METHYL N-BUTYL KETONE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.005 U	NA
METHYL TERT-BUTYL ETHER	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.005 U	NA
METHYLBENZENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
METHYLCYLOHEXANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.005 U	NA
STYRENE (MONOMER)	NL	NA	0.076 U	0.068 U	0.059	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
TETRACHLOROETHENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.002 U	NA
TRANS-1,2-DICHLOROETHENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
TRANS-1,3-DICHLOROPROPENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
TRIBOMOMETHANE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
TRICHLOROETHYLENE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
VINYL CHLORIDE	NL	NA	0.076 U	0.068 U	0.04 U	0.04 U	0.095 U	0.04 U	NA	0.001 U	NA
XYLENES, TOTAL	NL	NA	0.25	0.21 U	0.12 U	0.12 U	0.28 U	0.12 U	NA	0.003 U	NA
TCL SVOCs (Waste Solid/Soil = mg/kg, Waste Liquid = mg/L)											
1,1'-BIPHENYL	NL	NL	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.005 U	37 U
1,2-BENZPHENANTHRACENE	NL	8000	11	12	0.17	0.28	10	0.018 U	NA	0.005 U	0.74 U
2,4,5-TRICHLOROPHENOL	NL	73000	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
2,4,6-TRICHLOROPHENOL	NL	3300	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
2,4-DICHLOROPHENOL	NL	3900	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.01 U	18 U
2,4-DIMETHYLPHENOL	NL	36000	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.005 U	37 U
2,4-DINITROPHENOL	NL	NL	4.5 U	3.7 U	2.5 U	2.5 U	40 U	1.7 U	NA	0.005 U	74 U
2,4-DINITROTOLUENE	NL	220	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
2,6-DINITROTOLUENE	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U

Table 3
Solid Waste, Liquid Waste, and Soil Sample Analytical Results
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

	Location ID		AM-WS01	AM-WS02	AM-WS03	AM-WS04	AM-WS05	AM-WS06	AM-WS07	AM-WL01	AM-SS01
	Field Sample ID		AM-WS01-04242014	AM-WS02-04242014	AM-WS03-04242014	AM-WS04-04242014	AM-WS05-04242014	AM-WS06-04242014	AM-WS07-04242014	AM-WL01-04242014	AM-SS01-04242014
	Sample Type		Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Liquid Waste	Soil
	Sample Date		4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014
Chemical Name	40 CFR[1]	MDEQ DC[2]	Result								
2-CHLORONAPHTHALENE	NL	180000	0.045 U	0.037 U	0.026 U	0.025 U	0.41 U	0.018 U	NA	0.005 U	0.74 U
2-CHLOROPHENOL	NL	4500	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
2-METHYLNAPHTHALENE	NL	26000	0.045 U	0.037 U	0.15	0.025 U	0.41 U	0.018 U	NA	0.005 U	0.74 U
2-METHYLPHENOL	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
2-NITROANILINE	NL	NL	4.5 U	3.7 U	2.5 U	2.5 U	40 U	1.7 U	NA	0.02 U	74 U
2-NITROPHENOL	NL	2000	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
3,3'-DICHLOROBENZIDINE	NL	30	4.5 U	3.7 U	2.5 U	2.5 U	40 U	1.7 U	NA	0.005 U	74 U
3,5,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE	NL	22000	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
3-NITROANILINE	NL	NL	4.5 U	3.7 U	2.5 U	2.5 U	40 U	1.7 U	NA	0.02 U	74 U
4,6-DINITRO-2-METHYLPHENOL	NL	360	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.02 U	37 U
4-BROMOPHENYL PHENYL ETHER	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
4-CHLORO-3-METHYLPHENOL	NL	15000	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
4-CHLOROPHENYL PHENYL ETHER	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
4-METHYLPHENOL	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
4-NITROPHENOL	NL	NL	4.5 U	3.7 U	2.5 U	2.5 U	40 U	1.7 U	NA	0.02 U	74 U
ACENAPHTHENE	NL	150000	0.045 U	0.037 U	0.026 U	0.025 U	0.41 U	0.018 U	NA	0.005 U	0.74 U
ACENAPHTHYLENE	NL	5200	0.47	0.58	0.026 U	0.025 U	0.41 U	0.018 U	NA	0.005 U	0.74 U
ACETOPHENONE	NL	150000	2.2 U	1.8 U	1.3	1.2 U	20 U	0.87 U	NA	0.001 U	37 U
ANTHRACENE	NL	730000	1.4	1.4	0.12	0.15	2.2	0.018 U	NA	0.005 U	0.74 U
ATRAZINE	NL	330	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.001 U	37 U
BENZALDEHYDE	NL	NL	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.001 U	37 U
BENZO(A)ANTHRACENE	NL	80	7	7.3	0.16	0.2	5.6	0.018 U	NA	0.005 U	0.74 U
BENZO(A)PYRENE	NL	8	2.9	4.1	0.24	0.23	3.8	0.13	NA	0.005 U	0.74 U
BENZO(B)FLUORANTHENE	NL	80	7.6	11	0.31	0.38	12	0.13	NA	0.005 U	0.74 U
BENZO(G,H,I)PERYLENE	NL	7000	5.9	10	0.22	0.25	6.5	0.09	NA	0.005 U	0.74 U
BENZO(K)FLUORANTHENE	NL	800	8.1	9.1	0.19	0.19	4.6	0.098	NA	0.005 U	0.74 U
BENZYL BUTYL PHTHALATE	NL	120000	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
BIS(2-CHLOROETHOXY)METHANE	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
BIS(2-CHLOROETHYL)ETHER	NL	58	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
BIS(2-CHLOROISOPROPYL)ETHER	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
BIS(2-ETHYLHEXYL)PHTHALATE	NL	12000	11	8.5	36	1.2 U	20 U	0.87 U	NA	0.005 U	37 U
CAPROLACTAM	NL	310000	8.7	4.8	1.3 U	1.2 U	20 U	0.87 U	NA	0.01 U	37 U
CARBAZOLE	NL	2400	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.01 U	18 U
DIBENZO(A,H)ANTHRACENE	NL	8	1	1.6	0.026 U	0.025 U	2.6	0.018 U	NA	0.005 U	0.74 U
DIBENZOFURAN	NL	NL	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
DIETHYL PHTHALATE	NL	550000	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.02 U	37 U
DIMETHYL PHTHALATE	NL	1000000	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.02 U	37 U
DI-N-BUTYL PHTHALATE	NL	87000	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.005 U	37 U

Table 3
Solid Waste, Liquid Waste, and Soil Sample Analytical Results
Alreco Metals Site
Benton Harbor, Berrien County, Michigan

	Location ID		AM-WS01	AM-WS02	AM-WS03	AM-WS04	AM-WS05	AM-WS06	AM-WS07	AM-WL01	AM-SS01
	Field Sample ID		AM-WS01-04242014	AM-WS02-04242014	AM-WS03-04242014	AM-WS04-04242014	AM-WS05-04242014	AM-WS06-04242014	AM-WS07-04242014	AM-WL01-04242014	AM-SS01-04242014
	Sample Type		Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Solid Waste	Liquid Waste	Soil
	Sample Date		4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014	4/24/2014
Chemical Name	40 CFR[1]	MDEQ DC[2]	Result								
DI-N-OCTYL PHTHALATE	NL	20000	1.1 U	0.89 U	2.1	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
FLUORANTHENE	NL	130000	29	39	0.57	0.77	20	0.16	NA	0.005 U	6.2
FLUORENE	NL	87000	0.43	0.51	0.026 U	0.025 U	0.41 U	0.018 U	NA	0.005 U	0.74 U
HEXACHLORO-1,3-BUTADIENE	NL	470	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
HEXACHLOROBENZENE	NL	37	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
HEXACHLOROCYCLOPENTADIENE	NL	6700	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.02 U	37 U
HEXACHLOROETHANE	NL	730	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
INDENO(1,2,3-CD)PYRENE	NL	80	6.7	10	0.39	0.31	7.9	0.13	NA	0.005 U	0.74 U
NAPHTHALENE	NL	52000	0.31	0.15	0.076	0.025 U	0.41 U	0.018 U	NA	0.005 U	0.74 U
NITROBENZENE	NL	340	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
N-NITROSODI-N-PROPYLAMINE	NL	5.4	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
N-NITROSODIPHENYLAMINE	NL	7800	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
P-CHLOROANILINE	NL	NL	4.5 U	3.7 U	2.5 U	2.5 U	40 U	1.7 U	NA	0.02 U	74 U
PENTACHLOROPHENOL	NL	320	2.2 U	1.8 U	1.3 U	1.2 U	20 U	0.87 U	NA	0.02 U	37 U
PHENANTHRENE	NL	5200	19	26	0.28	0.39	12	0.018 U	NA	0.005 U	0.74 U
PHENOL	NL	250000	1.1 U	0.89 U	0.61 U	0.6 U	9.8 U	0.42 U	NA	0.005 U	18 U
P-NITROANILINE	NL	NL	4.5 U	3.7 U	2.5 U	2.5 U	40 U	1.7 U	NA	0.02 U	74 U
PYRENE	NL	84000	24	34	0.39	0.54	15	0.087	NA	0.005 U	7.3

Notes:
% - Percent
°F - Degree Fahrenheit
CFR - Code of Federal Regulations
DC - Direct Contact
ID - Identification
J - Estimated value
MDEQ - Michigan Department of Environmental Quality
mg/kg - Milligram per kilogram
mg/L - Milligram per liter
NA - Not analyzed/applicable
ND - Not detected
NL - Not listed
S.U. - Standard unit
SVOC - Semivolatile organic compound
TAL - Target Analyte List
TCL - Target Compound List
TCLP - Toxicity Characteristic Leaching Procedure
U - Not detected; the associated numerical value is the reporting limit
UJ - Not detected at the estimated associated numerical reporting limit
VOC - Volatile organic compound

1 Screening criteria from Title 40 of the CFR, Part 261, Subpart C
2 Screening criteria from MDEQ Cleanup Criteria Requirements for Response Activity - Non-Residential Soil Direct Contact

ENFORCEMENT ADDENDUM

HAS BEEN REDACTED – FOUR PAGES

ENFORCEMENT CONFIDENTIAL

NOT SUBJECT TO DISCOVERY

FOIA EXEMPT

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ATTACHMENT I

DETAILED CLEANUP CONTRACTOR ESTIMATE

HAS BEEN REDACTED – ONE PAGE

Attachment 2

U.S. Environmental Protection Agency
Removal Action

Administrative Record
for the

ALRECO Metals Site

Benton Harbor, Berrien County, Michigan

Original
July, 2014
SEMS ID:

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	914167	9/1/95	ATSDR	Public	ATSDR Tox FAQs Sheet for Acetone, CAS # 67-64-1	2
2	914169	9/1/96	ATSDR	Public	ATSDR Tox FAQs Sheet for Polycyclic Aromatic Hydrocarbons (PAHs)	2
3	913651	2/1/99	ATSDR	Public	ATSDR Tox FAQs Sheet for Chlorinated Dibenzo-p-dioxins	2
4	913653	6/1/99	ATSDR	Public	ATSDR Tox FAQs Sheet for Sulfur Trioxide and Sulfuric Acid, CAS # 7746-11-9 and 7664-93-9	2
5	914171	2/1/01	ATSDR	Public	ATSDR Tox FAQs Sheet for Polychlorinated Biphenyls	2
6	913652	4/1/01	ATSDR	Public	ATSDR Tox FAQs Sheet for Calcium Hypochlorite and Sodium Hypochlorite, CAS # 7778-54-3 and 7681-52-9	2
7	914170	8/1/05	ATSDR	Public	ATSDR Tox FAQs Sheet for Naphthalene, CAS # 91-20-3 - 1-Methylnaphthalene, CAS # 90-12-0 - 2-Methylnaphthalene, CAS # 91-57-6	2
8	914168	7/1/06	ATSDR	Public	ATSDR Tox FAQs Sheet for Cyanide, CAS # 74-90-8, 143-33-9, 151-50-8, 592-01-8, 544-92-3, 506-61-6, 460-19-5, 506-77-4	2

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
9	914172	8/1/07	ATSDR	Public	ATSDR Tox FAQs Sheet for Xylene, CAS # 1330-20-7	2
10	913859	3/31/14	Various staff, MDEQ	Nightingale, E., U.S. EPA	MDEQ Initial Referral Email Chain	28
11	913858	4/7/14	Hohm, J., and M. Baranoski, MDEQ	Reid, D., Reid Group LLC	Letter re: Violation Notice re 900 Alreco Property	3
12	913857	4/17/14	Reid, D., Reid Group LLC	Hohm, J., MDEQ	Letter re: Violation Notice re 900 Alreco Property	1
13	913860	6/9/14	Seitheimer, T., Weston Solutions	Nightingale, E., U.S. EPA	Site Assessment Report for the Alreco Metals Site	1111
14	913854	6/9/14	Fusinski, K., U.S. EPA	Nightingale, E., U.S. EPA	Memo re: Risk Assessment for Dioxin Contamination at the Alreco Metals Site	3
15	913855	7/14/14	Nightingale, E., U.S. EPA	Baranoski, M., MDEQ	Letter re: U.S. EPA Request to Identify ARARs for the ALRECO Site	1
16	913856	7/14/14	Baranoski, M., MDEQ	Nightingale, E., U.S. EPA	Letter re: ARARs Identified by MDEQ	4
17		-	Nightingale, E., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request for Approval of a Time-Critical Removal Action at the ALRECO Metal site	-

ATTACHMENT 3

INDEPENDENT GOVERNMENT COST ESTIMATE

HAS BEEN REDACTED – FIVE PAGES

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION